

Some Species of *Aganippe* (Araneae: Ctenizidae) from eastern Australia

RICHARD J. FAULDER

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Aganippe berlandi (Rainb.) is re-defined, and three new species of *Aganippe* (*A. montanus*, *A. winsori* and *A. planites*) from eastern Australia are described. A possible explanation for the observed distribution is given.

Richard J. Faulder, P.O. Box 136, Yanco, Australia 2703; manuscript received 18 September 1984, accepted for publication 20 February 1985.

INTRODUCTION

Main (1957: 437-8) discussed *Aganippe* species then known from east of the Flinders Ranges, South Australia, and considered them to belong to *Aganippe smeatoni* Hogg and *A. subtristis* Cambridge. In the first half of 1980 specimens from Kiamba, via Wagga Wagga, and Hillston in New South Wales, came into the author's possession, and could not be assigned to any existing species of the genus *Aganippe*. Subsequent investigations of the male specimens of members of this genus originating in the area east of the Flinders Ranges demonstrated the existence of two species-complexes in this area, made up of one named species (*Aganippe berlandi* Rainb.) and at least three undescribed species. While female specimens in museums are relatively common and collected from a wide area, male specimens are rare, and only the latter can at present be used for determining the ranges of the species.

NOTES ON DESCRIPTIONS

Measurements are given in millimetres and expressed as mean \pm standard deviation. Dorsal abdominal spinule density was measured in the area bounded by the sigillae, and is expressed in spines per 2mm². Leg spine counts are given in terms of dorsal and ventral fields, and only leg segments bearing spines are listed.

Unless stated otherwise all specimens are in the Australian Museum, Sydney.

Aganippe berlandi Rainbow

Aganippe berlandi Rainbow, 1914, *Rec. Aust. Mus.* 10: 199;

Main, 1957, *Aust. J. Zool.* 5: 429.

Diagnosis:

Male palpal embolus twisted, twisting being marked by two flanges. Lower tibial apophysis unifid, having a covering of short spines on side proximal to base of limb, other side being bare of spines. Upper tibial apophysis small (length about 1½ times its diameter) and located about half way between lower apophysis and distal end of tibia.

Female inner margin of spermathecal canal parallel with long axis of body.

Male (Figs 1-3): Description as in Rainbow (1914) except as follows.

Biometrics (3 males): Carapace length, 6.3 \pm 0.5; Carapace width, 5.4 \pm 0.2; Carapace height, 2.3 \pm 0.1; Maxillary length, 2.2 \pm 0; Maxillary width, 1.1 \pm 0.1; Sternum length, 3.5 \pm 0.2; Sternum width 2.8 \pm 0.3; Labium length, 0.3 \pm 0.1; Labium width, 0.8 \pm 0.1; Dorsal abdominal spinule density, 35 \pm 0.

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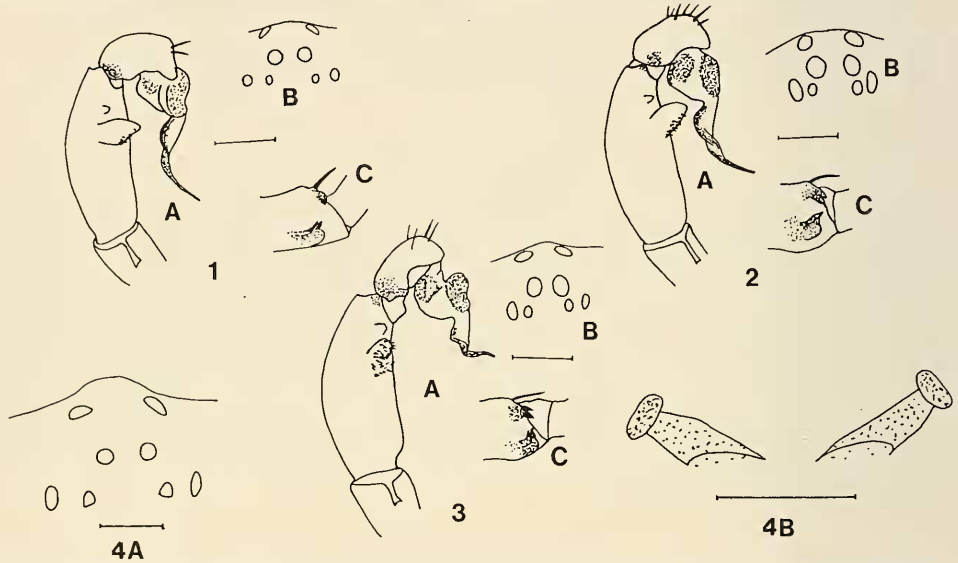
Biometrics (3 males): Carapace length, 6.3 \pm 0.5; Carapace width, 5.4 \pm 0.2; Carapace height, 2.3 \pm 0.1; Maxillary length, 2.2 \pm 0; Maxillary width, 1.1 \pm 0.1; Sternum length, 3.5 \pm 0.2; Sternum width 2.8 \pm 0.3; Labium length, 0.3 \pm 0.1; Labium width, 0.8 \pm 0.1; Dorsal abdominal spinule density, 35 \pm 0.

Variability of other characters:

Strong setae on lateral margins of carapace, in a line reaching from eyes almost to fovea, and in weak bands radiating from fovea. Carapace and legs yellow to yellowish-red. Abdomen with a dark dorsal patch.

Remarks:

More specimens might confirm trends in variations of the shape of the lower apophysis and the placement of spines on and around it which might necessitate the erection of a new species. However, for the moment the situation will be left as is.



Figs 1-4. *Aganippe berlandi* Rainb. Bars are 2mm. 1. Moonie male. A: right palp, B: eyes, C: tibial apophyses of right leg. 2. Male holotype. A: right palp, B: eyes, C: tibial apophyses of right leg. 3. Coonamble male. A: right palp, B: eyes, C: tibial apophyses of right leg. 4. Coonamble female. A: eyes, B: spermathecae.

Metallotype Female (KS9109) (Fig. 4)

Carapace length 10.2, width 8.0, height 5.0. Abdomen shrivelled, so dorsal abdominal spinule density not measured, length 13.0, width 9.8.

Colour in alcohol:

Carapace reddish-brown, chelicerae darker. Abdomen dark yellowish-brown. Legs concolorous with carapace. Glabrous strips on femorae, patellae and tibiae. Sternum lighter.

Carapace:

Broadly ovate, laterally of fovea narrowing posteriorly. Setae radiating in bands from fovea. Fovea procurved. Spines and setae between and in front of anteriolateral eyes.

Chelicerae:

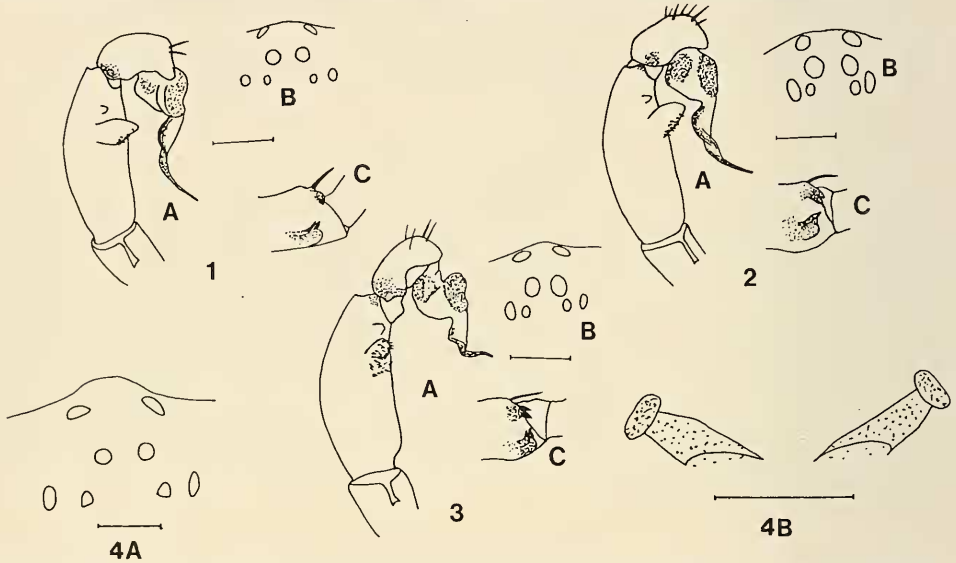
Length 6.5, height 4.7, width 3.0. Horizontal. Dorsally a glabrous strip enclosed at front and sides by bands of setae. Rastellum of 16 large teeth. Margins of cheliceral furrow with 6 teeth on each side with smaller teeth in groove.

Variability of other characters:

Strong setae on lateral margins of carapace, in a line reaching from eyes almost to fovea, and in weak bands radiating from fovea. Carapace and legs yellow to yellowish-red. Abdomen with a dark dorsal patch.

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Chelicerae:

Length 6.5, height 4.7, width 3.0. Horizontal. Dorsally a glabrous strip enclosed at front and sides by bands of setae. Rastellum of 16 large teeth. Margins of cheliceral furrow with 6 teeth on each side with smaller teeth in groove.

Labium:

Length 1.0, width 1.5. Semicircular anteriorly, indented anteriomedially. No cuspules. Separated from sternum by a furrow.

Maxillae:

Length 4.5, width 6.4. Slightly flattened, projecting toward midline of body from base. A few cuspules anteriorbasally.

Sternum:

Length 6.8, width 5.0. Anterior pair of sigillae halfway along sternum, separated from margin by their diameter. Posterior pair of sigillae two-thirds along sternum, separated from margin by $2\frac{1}{2}$ times their diameter.

Legs:

Dense scopulae on ventral surfaces of tarsi of palp and legs I and II only.

Spines on tibiae, where present setiform, with strong setae on ventral palpal tibiae.

	Palp	I	II	III	IV
Femur	5.5	6.5	6.0	5.0	7.2
Patella	2.5	3.1	3.7	3.2	4.7
Tibia	3.2	4.1	3.5	2.5	4.7
Metatarsus	—	2.9	3.0	3.0	4.5
Tarsus	4.2	2.2	2.5	2.2	3.0

Spines:

Palp: tarsus, 6v. Leg I: tibia, 5v; metatarsus, 7v; tarsus, 7v. Leg II: tibia, 4v; metatarsus, 9v; tarsus, 8v. Leg III: tibia, 4v 1d; metatarsus, 13v 13d; tarsus, 18v 2d. Leg IV: tibia, 6v; metatarsus, 14v 2d; tarsus, 21v.

Trichobothria:

Palp: tibia, 10; tarsus 12. Leg I: tibia, 15; metatarsus, 13; tarsus, 19. Leg II: tibia, 17; metatarsus, 15; tarsus, 15. Leg III: tibia, 10; metatarsus, 14; tarsus, 19. Leg IV: tibia, 12; metatarsus, 11; tarsus, 16.

Claws:

Superior tarsal claws with 1 small basal tooth.

Spinnerets:

4 (posterior median spinnerets broken off). Basal segment of posterior lateral spinnerets 1.3 long, apical segment 0.5 long.

Types

Holotype male collected Narrabri, N.S.W. In the Australian Museum, Sydney (KS1668).

Paratype Males: Coonamble, N.S.W., 21.v.1979, J. Stork (KS8322); Moonie, Q, 1974, T. Adams (in Queensland Museum).

Paratype Females: Coonamble, N.S.W., 10.vii.1968, J. T. Ewers (KS9109); Coonamble, N.S.W., 2.vi.1978, G. Fenton (KS1528).

Aganippe montanus sp. nov.

Diagnosis:

Male palpal embolus similar to *A. berlandi*. Lower tibial apophysis bifid, distal process with short spines. The other process is roundly pointed and bare of spines above its base. Upper tibial apophysis small and located at extreme distal end of tibia.

Labium:

Length 1.0, width 1.5. Semicircular anteriorly, indented anteriomedially. No cuspules. Separated from sternum by a furrow.

Maxillae:

Length 4.5, width 6.4. Slightly flattened, projecting toward midline of body from base. A few cuspules anteriorbasally.

Sternum:

Length 6.8, width 5.0. Anterior pair of sigillae halfway along sternum, separated from margin by their diameter. Posterior pair of sigillae two-thirds along sternum, separated from margin by $2\frac{1}{2}$ times their diameter.

Legs:

Dense scopulae on ventral surfaces of tarsi of palp and legs I and II only.

Spines on tibiae, where present setiform, with strong setae on ventral palpal tibiae.

	Palp	I	II	III	IV
Femur	5.5	6.5	6.0	5.0	7.2
Patella	2.5	3.1	3.7	3.2	4.7
Tibia	3.2	4.1	3.5	2.5	4.7
Metatarsus	—	2.9	3.0	3.0	4.5
Tarsus	4.2	2.2	2.5	2.2	3.0

Spines:

Palp: tarsus, 6v. Leg I: tibia, 5v; metatarsus, 7v; tarsus, 7v. Leg II: tibia, 4v; metatarsus, 9v; tarsus, 8v. Leg III: tibia, 4v 1d; metatarsus, 13v 13d; tarsus, 18v 2d. Leg IV: tibia, 6v; metatarsus, 14v 2d; tarsus, 21v.

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Superior tarsal claws with 1 small basal tooth.

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Female inner margin of spermathecal canal parallel with long axis of body.

Biometrics (4 males): Carapace length, 7.0 ± 1.0 ; Carapace width, 5.7 ± 0.7 ; Carapace height, 2.6 ± 0.6 ; Maxillary length, 2.3 ± 0.3 ; Maxillary width, 1.3 ± 0.1 ; Sternum length, 4.2 ± 0.4 ; Sternum width, 3.1 ± 0.1 ; Labium length, 0.3 ± 0.1 ; Labium width, 0.8 ± 0.2 ; Dorsal abdominal spinule density 39 ± 9 .

Variability of other characters:

Strong setae in median line reaching at least two-thirds of the way from the eyes to the fovea. Carapace and legs reddish-brown through reddish-yellow to yellowish-red, with legs concolorous. Abdominal coloration usually black dorsally and ventrally, but sometimes reduced to a dark dorsal pattern.

Holotype male (KS5055) (Fig. 6)

Carapace length 6.8, width 5.4. Abdomen length 5.5, width 4.5.

Colour in alcohol:

Carapace reddish-yellow; chelicerae darker. Abdomen black dorsally and laterally, lighter ventrally. Legs concolorous with carapace. Glabrous strips on femorae, patellae and tibiae. Sternum lighter.

Carapace:

Broadly ovate, laterally of fovea narrowing posteriorly. Spines on lateral margins of carapace, in a line reaching two-thirds of the way from eyes to fovea and in well-developed bands radiating from the fovea. Fovea very slightly procurved. Four large spines between anteriolateral eyes, smaller setae in front of these.

Chelicerae:

Length, 4.8; height, 2.0; width, 1.3. Curved downward. Dorsally a glabrous triangle enclosed on each side by bands of setae. Rastellum of 4 large teeth plus smaller teeth. Margins of cheliceral groove with 4 teeth on each side, evenly spaced.

Labium:

Length 0.3, width 0.9. Semicircular anteriorly, indented anteriomedially. No cuspules. Separated from sternum by a furrow.

Maxillae:

Length 2.0, width 1.2. Slightly flattened cylinder. A number of cuspules present anteriorbasally.

Sternum:

Length 3.8, width 3.2. Covered with setae and bristles. Anterior pair of sigillae halfway along sternum, separated from margin by $1\frac{1}{2}$ times their length. Posterior pair of sigillae two-thirds along sternum, separated from margin by $2\frac{1}{2}$ times their length.

Legs:

Dense scopulae on ventral surfaces of tarsi I and II only.

	Palp	I	II	III	IV
Femur	4.2	7.0	6.3	4.6	6.3
Patella	2.1	3.1	2.7	1.8	2.0
Tibia	3.6	5.0	5.0	3.7	5.3
Metatarsus	—	4.5	4.3	4.5	5.6
Tarsus	1.5	3.0	3.2	3.5	3.6

Female inner margin of spermathecal canal parallel with long axis of body.

Biometrics (4 males): Carapace length, 7.0 ± 1.0 ; Carapace width, 5.7 ± 0.7 ; Carapace height, 2.6 ± 0.6 ; Maxillary length, 2.3 ± 0.3 ; Maxillary width, 1.3 ± 0.1 ; Sternum length, 4.2 ± 0.4 ; Sternum width, 3.1 ± 0.1 ; Labium length, 0.3 ± 0.1 ; Labium width, 0.8 ± 0.2 ; Dorsal abdominal spinule density 39 ± 9 .

Variability of other characters:

Strong setae in median line reaching at least two-thirds of the way from the eyes to the fovea. Carapace and legs reddish-brown through reddish-yellow to yellowish-red, with legs concolorous. Abdominal coloration usually black dorsally and ventrally, but sometimes reduced to a dark dorsal pattern.

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Carapace:

Broadly ovate, laterally of fovea narrowing posteriorly. Spines on lateral margins of carapace, in a line reaching two-thirds of the way from eyes to fovea and in well-developed bands radiating from the fovea. Fovea very slightly procurved. Four large spines between anteriolateral eyes, smaller setae in front of these.

Chelicerae:

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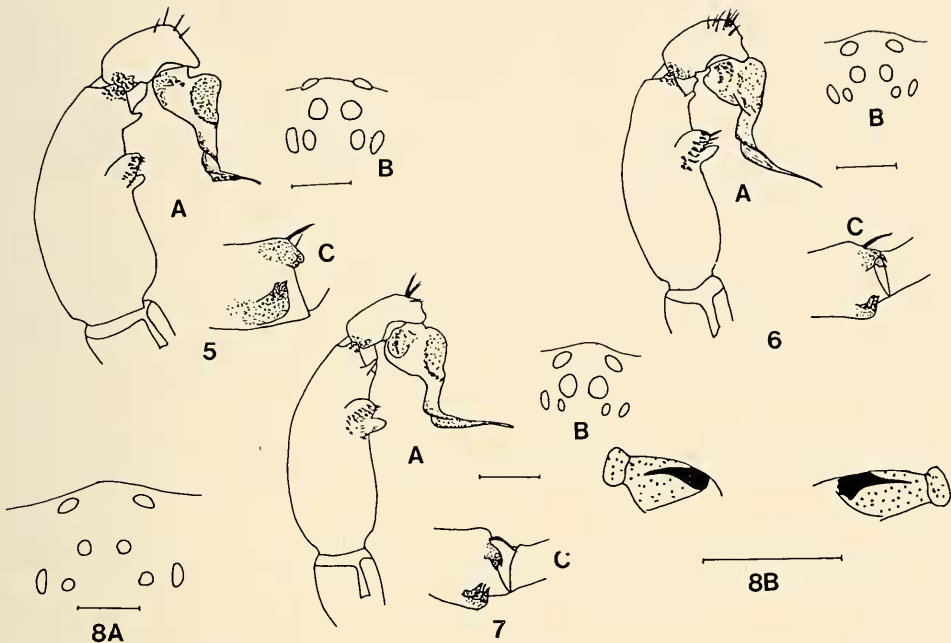
Sternum:

Length 3.8, width 3.2. Covered with setae and bristles. Anterior pair of sigillae halfway along sternum, separated from margin by $1\frac{1}{2}$ times their length. Posterior pair of sigillae two-thirds along sternum, separated from margin by $2\frac{1}{2}$ times their length.

Legs:

Dense scopulae on ventral surfaces of tarsi I and II only.

	Palp	I	II	III	IV
Femur	4.2	7.0	6.3	4.6	6.3
Patella	2.1	3.1	2.7	1.8	2.0
Tibia	3.6	5.0	5.0	3.7	5.3
Metatarsus	—	4.5	4.3	4.5	5.6
Tarsus	1.5	3.0	3.2	3.5	3.6



Figs 5-8. *Aganippe montanus* sp. nov. Bars are 2mm. 5. Forbes male. A: right palp, B: eyes, C: tibial apophyses of right leg. 6. Male holotype. A: right palp, B: eyes, C: tibial apophyses of right leg. 7. Wagga Wagga male. A: right palp, B: eyes, C: tibial apophyses of right leg. 8. Young female. A: eyes, B: spermathecae. Note sclerotized region of canal, not observed in other specimens.

Spines:

Palp: tibia, 11d. Leg I: tibia, 2v; metatarsus, 8v. Leg II: tibia, 11v 4d; metatarsus, 11v. Leg III: tibia, 8v 10d; metatarsus, 19v 14d; tarsus, 19v 9d. Leg IV: tibia, 8v 13d; metatarsus, 10v 15d; tarsus, 19v 8d. All spines except those on palpal tibiae setiform and surrounded by strong setae, which makes differentiation uncertain.

Trichobothria:

Palp: tibia, 7; tarsus, 9. Leg I: tibia, 11; metatarsus, 11; tarsus, 13. Leg II: tibia, 7; metatarsus, 12; tarsus, 15. Leg III: tibia, 10; metatarsus, 9; tarsus, 14. Leg IV: tibia, 6; metatarsus, 8; tarsus, 11.

Claws:

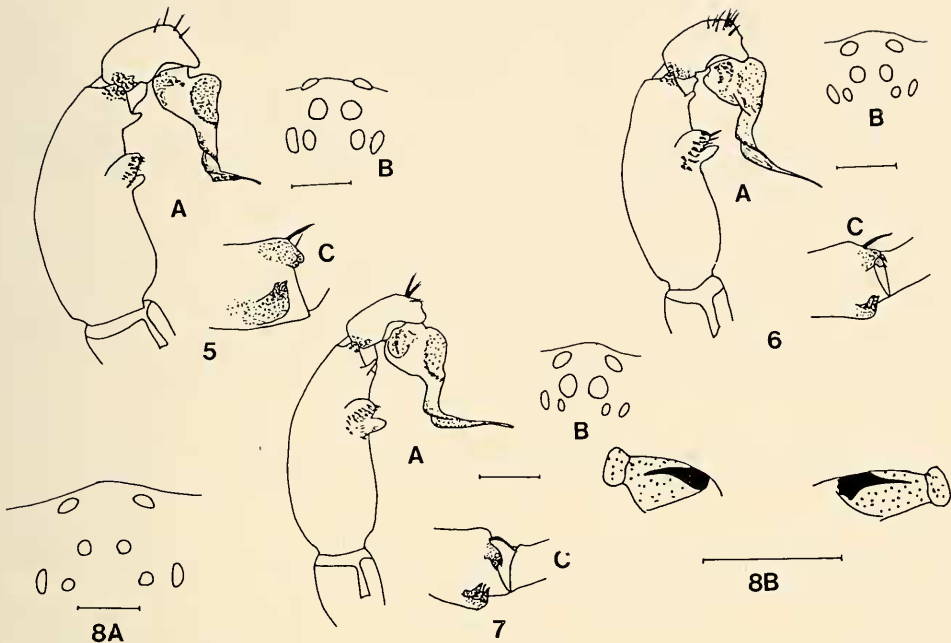
Superior tarsal claws with 6 long teeth in one row.

Spinnerets:

4, not visible dorsally, posterior median spinnerets 0.4 long, 0.2 wide. Basal segment of posterior lateral spinnerets 0.5 long, apical segment 0.5 long.

Paratype female (KS4417) (Fig. 8)

Carapace length 9.6, width 7.7, height 4.1. Abdomen shrivelled, so dorsal abdominal spinule density not counted, length 15.3, width 11.0.



Figs 5-8. *Aganippe montanus* sp. nov. Bars are 2mm. 5. Forbes male. A: right palp, B: eyes, C: tibial apophyses of right leg. 6. Male holotype. A: right palp, B: eyes, C: tibial apophyses of right leg. 7. Wagga Wagga male. A: right palp, B: eyes, C: tibial apophyses of right leg. 8. Young female. A: eyes, B: spermathecae. Note sclerotized region of canal, not observed in other specimens.

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Claws:

Superior tarsal claws with 6 long teeth in one row.

Spinnerets:

4, not visible dorsally, posterior median spinnerets 0.4 long, 0.2 wide. Basal segment of posterior lateral spinnerets 0.5 long, apical segment 0.5 long.

Paratype female (KS4417) (Fig. 8)

Carapace length 9.6, width 7.7, height 4.1. Abdomen shrivelled, so dorsal abdominal spinule density not counted, length 15.3, width 11.0.

Colour in alcohol:

Carapace reddish-brown, chelicerae concolorous, abdomen greyish-yellow dorsally, less grey ventrally, with lungbook covers darker. Legs concolorous with carapace. Glabrous strips on femorae, patellae and tibia. Sternum lighter.

Carapace:

Broadly ovate, laterally of fovea narrowing posteriorly. Fine setae on margins of carapace and in bands radiating from fovea. Fovea procurved. Strong setae between and in front of anteriolateral eyes.

Chelicerae:

Length, 6.0; height, 4.8; width, 2.6. Horizontal. Dorsally glabrous, except along the margin adjacent to the other chelicera, and a thin band of setae reaching halfway from anterior end. Rastellum of 24 large teeth. Margins of cheliceral furrow with 6 teeth, plus nodules in furrow.

Labium:

Length 0.6, width 1.1. Semicircular anteriorly, indented anteriomedially. No cuspules. Separated from sternum by a glabrous band.

Maxillae:

Length 4.0, width 2.2. Slightly flattened, projecting toward midline of body from base. A few cuspules anteriobasally.

Sternum:

Length 5.8, width 4.8. Covered with setae and bristles. Anterior pair of sigillae in an indentation halfway along sternum, separated from margin by their length. Posterior pair of sigillae two-thirds along sternum, separated from margin by $1\frac{1}{2}$ times their diameter.

Legs:

Dense scopulae on ventral surface of tarsi of palp and legs I and II only. Spines on tibia where present setiform, with strong setae on venters of all tibiae.

	Palp	I	II	III	IV
Femur	6.3	6.0	5.8	4.6	6.4
Patella	3.2	3.5	3.5	3.1	4.2
Tibia	3.3	4.0	3.5	2.4	4.2
Metatarsus	—	2.8	2.9	3.0	4.0
Tarsus	3.8	2.3	2.2	2.3	2.5

Spines:

Palp: tarsus, 2v. Leg I: tibia, 2v; metatarsus, 6v; tarsus, 3v. Leg II: tibia, 1v; metatarsus, 5v; tarsus, 11v. Leg III: metatarsus, 7v 14d; tarsus, 12v 2d. Leg IV: tibia, 1v; metatarsus, 11v, tarsus, 16v.

Trichobothria:

Palp: tibia, 10; tarsus 15. Leg I: tibia, 10; metatarsus, 14; tarsus, 14. Leg II: tibia, 12; metatarsus, 12; tarsus, 14. Leg III: tibia, 12; metatarsus, 9; tarsus, 19. Leg IV: tibia, 16; metatarsus, 7; tarsus, 17.

Claws:

Superior tarsal claws with one small basal tooth.

Colour in alcohol:

Carapace reddish-brown, chelicerae concolorous, abdomen greyish-yellow dorsally, less grey ventrally, with lungbook covers darker. Legs concolorous with carapace. Glabrous strips on femorae, patellae and tibia. Sternum lighter.

Carapace:

Broadly ovate, laterally of fovea narrowing posteriorly. Fine setae on margins of carapace and in bands radiating from fovea. Fovea procurved. Strong setae between and in front of anteriolateral eyes.

Chelicerae:

Length, 6.0; height, 4.8; width, 2.6. Horizontal. Dorsally glabrous, except along the margin adjacent to the other chelicera, and a thin band of setae reaching halfway from anterior end. Rastellum of 24 large teeth. Margins of cheliceral furrow with 6 teeth, plus nodules in furrow.

Labium:

Length 0.6, width 1.1. Semicircular anteriorly, indented anteriomedially. No cuspules. Separated from sternum by a glabrous band.

Maxillae:

Length 4.0, width 2.2. Slightly flattened, projecting toward midline of body from base. A few cuspules anteriobasally.

Sternum:

Length 5.8, width 4.8. Covered with setae and bristles. Anterior pair of sigillae in an indentation halfway along sternum, separated from margin by their length. Posterior pair of sigillae two-thirds along sternum, separated from margin by $1\frac{1}{2}$ times their diameter.

Legs:

Dense scopulae on ventral surface of tarsi of palp and legs I and II only. Spines on tibia where present setiform, with strong setae on venters of all tibiae.

	Palp	I	II	III	IV
Femur	6.3	6.0	5.8	4.6	6.4
Patella	3.2	3.5	3.5	3.1	4.2
Tibia	3.3	4.0	3.5	2.4	4.2
Metatarsus	—	2.8	2.9	3.0	4.0
Tarsus	3.8	2.3	2.2	2.3	2.5

Spines:

Palp: tarsus, 2v. Leg I: tibia, 2v; metatarsus, 6v; tarsus, 3v. Leg II: tibia, 1v; metatarsus, 5v; tarsus, 11v. Leg III: metatarsus, 7v 14d; tarsus, 12v 2d. Leg IV: tibia, 1v; metatarsus, 11v, tarsus, 16v.

Trichobothria:

Palp: tibia, 10; tarsus 15. Leg I: tibia, 10; metatarsus, 14; tarsus, 14. Leg II: tibia, 12; metatarsus, 12; tarsus, 14. Leg III: tibia, 12; metatarsus, 9; tarsus, 19. Leg IV: tibia, 16; metatarsus, 7; tarsus, 17.

Claws:

Superior tarsal claws with one small basal tooth.

Spinnerets:

4 visible dorsally. Posterior median spinnerets 0.6 long, 0.4 wide. Basal segment of posterior lateral spinnerets 0.8 long, apical segment 0.6 long.

Types

Holotype male collected Young, N.S.W., 9.iv.1980 by P. A. Parker. In the Australian Museum, Sydney (KS5055).

Paratype Males: Young, N.S.W., 20.v.1971, A. Gibbons (KS5897); Forbes, N.S.W., 23.iv.1979 (KS2722); Yass, N.S.W., 4.iv.1979 (KS3071); Kiamba, near Wagga Wagga, N.S.W., 15.v.1980, L. Hemsley (KS8323).

Paratype Female: Young, N.S.W., 16.i.1980 (KS4417).

Aganippe winsori sp. nov.

(Fig. 9)

Diagnosis:

Male palpal stigma twisted, as for *A. berlandi*. Lower tibial apophysis as for *A. montanus*, except that proximal process is also spinose. Upper tibial apophysis absent.

Holotype male (KS5894)

Carapace length 7.3, width 6.3, height 2.0. Abdomen length, 5.6; width 4.1. Dorsal abdominal spinule density, 51.

Colour in alcohol:

Carapace dark reddish brown, chelicerae concolorous, abdomen black dorsally and laterally, lighter ventrally. Legs concolorous with carapace. Glabrous strips on femorae, patellae and tibiae. Sternum lighter.

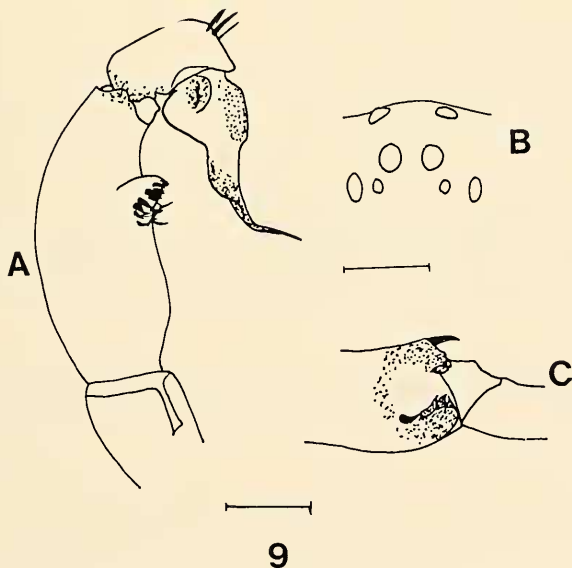


Fig. 9. *Aganippe winsori* sp. nov. Bar is 2mm. Male holotype. A: right palp, B, eyes, C: tibial apophyses of right leg.

Carapace:

Broadly ovate, laterally of fovea narrowing posteriorly. Strong setae on lateral margins of carapace, in a line reaching two-thirds of the way from eyes to fovea, and in

Spinnerets:

4 visible dorsally. Posterior median spinnerets 0.6 long, 0.4 wide. Basal segment of posterior lateral spinnerets 0.8 long, apical segment 0.6 long.

Types

Holotype male collected Young, N.S.W., 9.iv.1980 by P. A. Parker. In the Australian Museum, Sydney (KS5055).

Paratype Males: Young, N.S.W., 20.v.1971, A. Gibbons (KS5897); Forbes, N.S.W., 23.iv.1979 (KS2722); Yass, N.S.W., 4.iv.1979 (KS3071); Kiamba, near Wagga Wagga, N.S.W., 15.v.1980, L. Hemsley (KS8323).

Paratype Female: Young, N.S.W., 16.i.1980 (KS4417).

Aganippe winsori sp. nov.

(Fig. 9)

Diagnosis:

Male palpal stigma twisted, as for *A. berlandi*. Lower tibial apophysis as for *A. montanus*, except that proximal process is also spinose. Upper tibial apophysis absent.

Holotype male (KS5894)

Carapace length 7.3, width 6.3, height 2.0. Abdomen length, 5.6; width 4.1. Dorsal abdominal spinule density, 51.

Colour in alcohol:

Carapace dark reddish brown, chelicerae concolorous, abdomen black dorsally and laterally, lighter ventrally. Legs concolorous with carapace. Glabrous strips on femorae, patellae and tibiae. Sternum lighter.

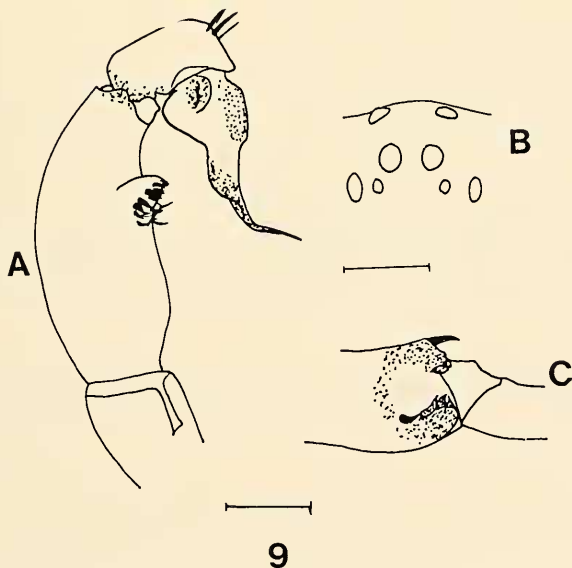


Fig. 9. *Aganippe winsori* sp. nov. Bar is 2mm. Male holotype. A: right palp, B, eyes, C: tibial apophyses of right leg.

Carapace:

Broadly ovate, laterally of fovea narrowing posteriorly. Strong setae on lateral margins of carapace, in a line reaching two-thirds of the way from eyes to fovea, and in

well-developed bands radiating from near fovea. Fovea straight. Four large setae between anteriolateral eyes, smaller setae in front of these.

Chelicerae:

Length, 3.1; height, 1.9; width, 1.1; curved downward. Dorsally a long glabrous triangle enclosed on each side by bands of setae. Rastellum of 5 large teeth plus smaller teeth. Inner margin of cheliceral furrow with 5 teeth, outer margin with 2.

Labium:

Length 0.3, width 0.7. Semicircular anteriorly, indented anteriomedially. No cuspules. Separated from sternum by a furrow.

Maxillae:

Length 2.0, width 1.4. Slightly flattened cylinder. A few cuspules present anteriorbasally.

Sternum:

Length 3.9, width 2.9. Covered with setae and bristles. Anterior pair of sigillae halfway along sternum, separated from margin by half their length. Posterior pair of sigillae two-thirds along sternum, separated from margin by $2\frac{1}{2}$ times their length.

Legs:

Dense scopulae on ventral surfaces of tarsi I and II only.

	Palp	I	II	III	IV
Femur	4.2	7.0	7.2	6.1	7.2
Patella	1.9	3.2	3.0	2.5	3.0
Tibia	3.5	5.8	5.7	4.5	6.2
Metatarsus	—	4.7	4.2	5.0	6.2
Tarsus	1.4	3.2	3.1	3.5	4.5

Spines:

Palp: tarsus, 5d; Leg I: tibia, 8v; metatarsus, 10v. Leg II: tibia, 12v; metatarsus, 9v. Leg III: tibia, 13v 12d; metatarsus, 11v 14d; tarsus 20v. Leg IV: tibia, 11v 27d; metatarsus, 12v 12d; tarsus 26v. All spines setiform and, except on metatarsi I and II and tarsi of palp and leg III, surrounded by strong setae, which makes differentiation uncertain.

Trichobothria:

Palp: tibia, 8; tarsus, 12. Leg I: tibia, 9; metatarsus, 15; tarsus, 14. Leg II: tibia, 11; metatarsus, 7; tarsus, 13. Leg III: tibia, 9; metatarsus, 10; tarsus, 15. Leg IV: tibia, 12; metatarsus, 8; tarsus, 14.

Claws:

Superior tarsal claws with 7 long teeth in one row.

Spinnerets:

4, not visible dorsally, posterior median spinnerets 0.4 long, 0.2 wide. Basal segment of posterior lateral spinnerets 0.6 long, apical segment 0.4 long.

Type

Holotype male collected Granprians Range, near Reid's Lookout track, Victoria, 24.iv.1973 by L. Winsor. In the Australian Museum, Sydney (KS5894).

well-developed bands radiating from near fovea. Fovea straight. Four large setae between anteriolateral eyes, smaller setae in front of these.

Chelicerae:

Length, 3.1; height, 1.9; width, 1.1; curved downward. Dorsally a long glabrous triangle enclosed on each side by bands of setae. Rastellum of 5 large teeth plus smaller teeth. Inner margin of cheliceral furrow with 5 teeth, outer margin with 2.

Labium:

Length 0.3, width 0.7. Semicircular anteriorly, indented anteriomedially. No cuspules. Separated from sternum by a furrow.

Maxillae:

Length 2.0, width 1.4. Slightly flattened cylinder. A few cuspules present anteriorbasally.

Sternum:

Length 3.9, width 2.9. Covered with setae and bristles. Anterior pair of sigillae halfway along sternum, separated from margin by half their length. Posterior pair of sigillae two-thirds along sternum, separated from margin by $2\frac{1}{2}$ times their length.

Legs:

Dense scopulae on ventral surfaces of tarsi I and II only.

	Palp	I	II	III	IV
Femur	4.2	7.0	7.2	6.1	7.2
Patella	1.9	3.2	3.0	2.5	3.0
Tibia	3.5	5.8	5.7	4.5	6.2
Metatarsus	—	4.7	4.2	5.0	6.2
Tarsus	1.4	3.2	3.1	3.5	4.5

Spines:

Palp: tarsus, 5d; Leg I: tibia, 8v; metatarsus, 10v. Leg II: tibia, 12v; metatarsus, 9v. Leg III: tibia, 13v 12d; metatarsus, 11v 14d; tarsus 20v. Leg IV: tibia, 11v 27d; metatarsus, 12v 12d; tarsus 26v. All spines setiform and, except on metatarsi I and II and tarsi of palp and leg III, surrounded by strong setae, which makes differentiation uncertain.

Trichobothria:

Palp: tibia, 8; tarsus, 12. Leg I: tibia, 9; metatarsus, 15; tarsus, 14. Leg II: tibia, 11; metatarsus, 7; tarsus, 13. Leg III: tibia, 9; metatarsus, 10; tarsus, 15. Leg IV: tibia, 12; metatarsus, 8; tarsus, 14.

Claws:

Superior tarsal claws with 7 long teeth in one row.

Spinnerets:

4, not visible dorsally, posterior median spinnerets 0.4 long, 0.2 wide. Basal segment of posterior lateral spinnerets 0.6 long, apical segment 0.4 long.

Type

Holotype male collected Granpians Range, near Reid's Lookout track, Victoria, 24.iv.1973 by L. Winsor. In the Australian Museum, Sydney (KS5894).

Aganippe planites sp. nov.

Diagnosis:

Male palpal stigma bent, but not twisted, and without ridges. Lower tibial apophysis unifid and flattened at its apex, with a covering of short spines over flattened portion. Upper tibial apophysis long and narrow (about 5 times diameter — 7 times in the type) and located close to lower apophysis (about a quarter of distance between lower apophysis and distal end of tibia) (Figs 10-12).

Biometrics (7 males): Carapace length, 7.6 ± 0.5 ; Carapace width, 6.5 ± 0.7 ; Carapace height, 2.4 ± 0.5 ; Maxillary length, 2.5 ± 0.3 ; Maxillary width, 1.4 ± 0.2 ; Sternum length, 4.6 ± 0.4 ; Sternum width, 3.5 ± 0.3 ; Labium length, 0.2 ± 0.1 ; Labium width, 1.0 ± 0.1 ; Dorsal abdominal spinule density 35 ± 9 .

Variability of other characters:

Strong setae in a line reaching at most two-thirds of the way from eyes to fovea.

Holotype male (KS8324)

Carapace length 7.3, width 7.0, height 1.9. Abdomen length, 7.7; width 6.1. Dorsal abdominal spinule density, 27.

Colour in alcohol:

Carapace reddish-yellow, chelicerae darker. Abdomen with a darker dorsal pattern. Legs concolorous with carapace, except that setiferous areas of patellae are dark and coxae and trochanters darker than carapace dorsally. Glabrous strips on femorae, patellae and tibiae. Sternum lighter.

Carapace:

Broadly ovate, laterally of fovea narrowing posteriorly. Strong setae on lateral margins of carapace, in a line reaching halfway from the eyes to the fovea and in weak bands radiating from the fovea. Fovea very slightly procurved. Two very large setae between anteriolateral eyes, smaller setae in front of these.

Chelicerae:

Length, 3.2; height, 2.0; width, 1.5. Curved downward. Dorsally a glabrous triangle enclosed on each side by bands of setae. Rastellum of 4 large teeth plus smaller teeth. Inner margin of cheliceral furrow with 3 teeth, outer margin with 4.

Labium:

Length 0.2, width 0.9. Semicircular anteriorly, indented anteriomedially. No cusps. Separated from sternum by a furrow.

Maxillae:

Length 2.9, width 1.4. Slightly flattened cylinder. A number of cusps present anteriobasally.

Sternum:

Length 4.9, width 3.7. Covered with setae and bristles. Anterior pair of sigillae halfway along sternum, separated from margin by their length. Posterior pair of sigillae two-thirds along sternum, separated from margin by $2\frac{1}{2}$ times their length.

Aganippe planites sp. nov.

Diagnosis:

Male palpal stigma bent, but not twisted, and without ridges. Lower tibial apophysis unifid and flattened at its apex, with a covering of short spines over flattened portion. Upper tibial apophysis long and narrow (about 5 times diameter — 7 times in the type) and located close to lower apophysis (about a quarter of distance between lower apophysis and distal end of tibia) (Figs 10-12).

Biometrics (7 males): Carapace length, 7.6 ± 0.5 ; Carapace width, 6.5 ± 0.7 ; Carapace height, 2.4 ± 0.5 ; Maxillary length, 2.5 ± 0.3 ; Maxillary width, 1.4 ± 0.2 ; Sternum length, 4.6 ± 0.4 ; Sternum width, 3.5 ± 0.3 ; Labium length, 0.2 ± 0.1 ; Labium width, 1.0 ± 0.1 ; Dorsal abdominal spinule density 35 ± 9 .

Variability of other characters:

Strong setae in a line reaching at most two-thirds of the way from eyes to fovea.

Holotype male (KS8324)

Carapace length 7.3, width 7.0, height 1.9. Abdomen length, 7.7; width 6.1. Dorsal abdominal spinule density, 27.

Colour in alcohol:

Carapace reddish-yellow, chelicerae darker. Abdomen with a darker dorsal pattern. Legs concolorous with carapace, except that setiferous areas of patellae are dark and coxae and trochanters darker than carapace dorsally. Glabrous strips on femorae, patellae and tibiae. Sternum lighter.

Carapace:

Broadly ovate, laterally of fovea narrowing posteriorly. Strong setae on lateral margins of carapace, in a line reaching halfway from the eyes to the fovea and in weak bands radiating from the fovea. Fovea very slightly procurved. Two very large setae between anteriolateral eyes, smaller setae in front of these.

Chelicerae:

Length, 3.2; height, 2.0; width, 1.5. Curved downward. Dorsally a glabrous triangle enclosed on each side by bands of setae. Rastellum of 4 large teeth plus smaller teeth. Inner margin of cheliceral furrow with 3 teeth, outer margin with 4.

Labium:

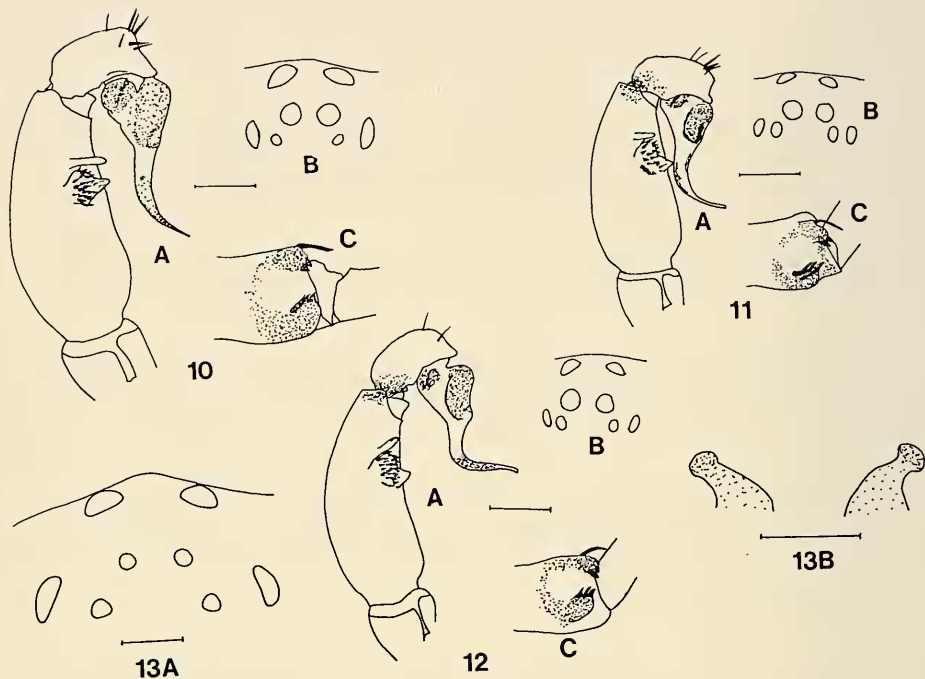
Length 0.2, width 0.9. Semicircular anteriorly, indented anteriomedially. No cusps. Separated from sternum by a furrow.

Maxillae:

Length 2.9, width 1.4. Slightly flattened cylinder. A number of cusps present anteriobasally.

Sternum:

Length 4.9, width 3.7. Covered with setae and bristles. Anterior pair of sigillae halfway along sternum, separated from margin by their length. Posterior pair of sigillae two-thirds along sternum, separated from margin by $2\frac{1}{2}$ times their length.



Figs 10-13. *Aganippe planites* sp. nov. Bars are 2mm. 10. Male holotype. A: right palp, B: eyes, C: tibial apophyses of right leg. 11. Benalla male. A: right palp, B: eyes, C: tibial apophyses of right leg. 12. Tamworth male: A: right palp, B: eyes, C: tibial apophyses of right leg. 13. Hay female. A: eyes, B: spermathecae.

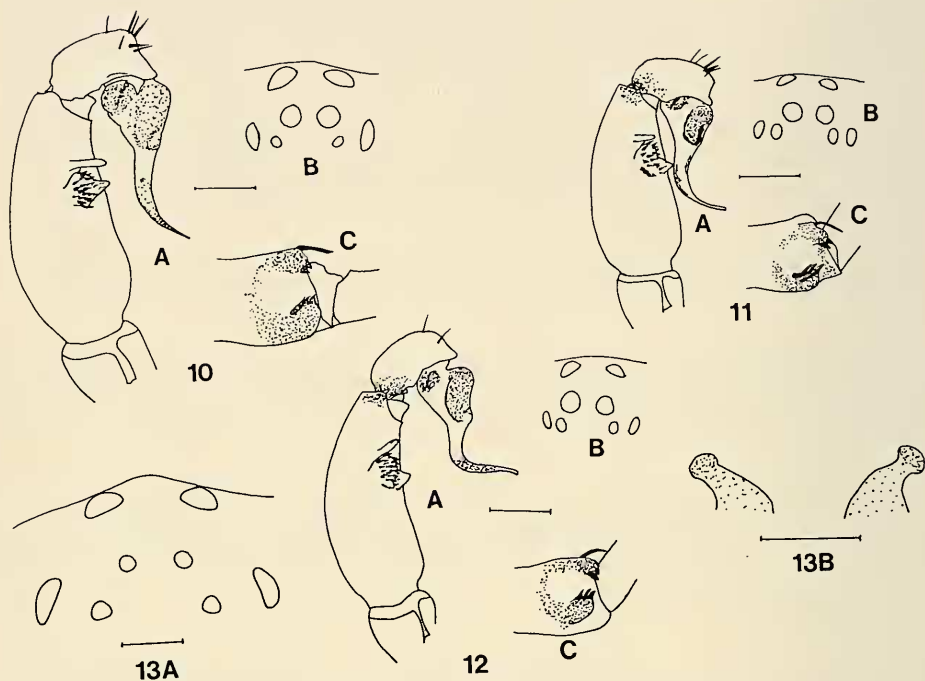
Legs:

Dense scopulae on ventral surfaces of tarsi I and II only.

	Palp	I	II	III	IV
Femur	3.2	7.8	7.1	5.7	6.6
Patella	2.2	3.9	3.9	3.1	3.9
Tibia	3.8	6.0	5.6	4.0	6.3
Metatarsus	—	5.1	5.3	3.9	6.6
Tarsus	1.5	3.0	3.5	3.5	3.8

Spines:

Palp: tarsus, 5d. Leg I: tarsus, 9v; metatarsus, 7v. Leg II: tibia, 7v 1d; metatarsus, 9v. Leg III: tibia, 9v 4d; metatarsus, 12v 9d; tarsus, 13v 8d. Leg IV: tibia, 8v 5d; metatarsus, 10v 6d; tarsus, 14v 8d. All spines setiform and, except on metatarsi I and II, surrounded by strong setae, which makes differentiation difficult.



Figs 10-13. *Aganippe planites* sp. nov. Bars are 2mm. 10. Male holotype. A: right palp, B: eyes, C: tibial apophyses of right leg. 11. Benalla male. A: right palp, B: eyes, C: tibial apophyses of right leg. 12. Tamworth male: A: right palp, B: eyes, C: tibial apophyses of right leg. 13. Hay female. A: eyes, B: spermathecae.

Legs:

Dense scopulae on ventral surfaces of tarsi I and II only.

	Palp	I	II	III	IV
Femur	3.2	7.8	7.1	5.7	6.6
Patella	2.2	3.9	3.9	3.1	3.9
Tibia	3.8	6.0	5.6	4.0	6.3
Metatarsus	—	5.1	5.3	3.9	6.6
Tarsus	1.5	3.0	3.5	3.5	3.8

Spines:

Palp: tarsus, 5d. Leg I: tarsus, 9v; metatarsus, 7v. Leg II: tibia, 7v 1d; metatarsus, 9v. Leg III: tibia, 9v 4d; metatarsus, 12v 9d; tarsus, 13v 8d. Leg IV: tibia, 8v 5d; metatarsus, 10v 6d; tarsus, 14v 8d. All spines setiform and, except on metatarsi I and II, surrounded by strong setae, which makes differentiation difficult.

Trichobothria:

Palp: tibia, 9; tarsus, 15. Leg I: tibia, 10; metatarsus, 15; tarsus, 21. Leg II: tibia, 12; metatarsus, 13; tarsus, 14. Leg III: tibia, 11; metatarsus, 8; tarsus, 19. Leg IV: tibia, 12; metatarsus, 6; tarsus, 12.

Claws:

Superior tarsal claws with 6 long teeth in one row.

Spinnerets:

4, visible dorsally. Posterior median spinnerets 0.5 long, 0.3 wide. Basal segment of posterior lateral spinnerets 1.0 long, apical segment 0.6 long.

Paratype female (KS9108) (Fig. 13)

Carapace length 10.0, width 9.3, height 4.0. Abdomen length 16.0, width 11.5. Dorsal abdominal spinule density, 38.

Colour in alcohol:

Carapace grey-brown, chelicerae darker and redder. Abdomen yellow-grey, with a darker dorsal pattern. Legs concolorous with carapace except that setiferous areas of leg segments are darker. Glabrous strips on femorae, patellae and tibiae. Sternum lighter.

Carapace:

Broadly ovate, narrowing posteriorly from about a third from front. Fine setae on lateral margins of carapace and in bands radiating from the fovea. Strong setae between and in front of anteriolateral eyes and in a band reaching two-thirds of way from eyes to fovea. Fovea procurved.

Chelicerae:

Length, 6.0; height, 3.9; width, 3.0. Horizontal. Dorsally glabrous except for a setiferous triangle pointing backward from the front. Rastellum of 19 teeth. Outer margin of cheliceral groove with 8 teeth plus nodules adjacent in the furrow. Inner margin of groove with 6 large teeth.

Labium:

Length 1.0, width 2.1. Semicircular anteriorly, indented anteriomedially. No cuspules. Separated from sternum by a furrow.

Maxillae:

Length 3.7, width 3.0. Flattened, with a basal projection toward midline of body. Cuspules present anteriobasally.

Sternum:

Length 7.8, width 5.5. Covered with setae and bristles. Anterior pair of sigillae halfway along sternum, separated from margin by their length. Posterior pair of sigillae just behind these, separated from margin by twice their length.

Legs:

Dense scopulae on ventral surfaces of tarsi of palps and legs I and II only. Tibial spines setiform.

Trichobothria:

Palp: tibia, 9; tarsus, 15. Leg I: tibia, 10; metatarsus, 15; tarsus, 21. Leg II: tibia, 12; metatarsus, 13; tarsus, 14. Leg III: tibia, 11; metatarsus, 8; tarsus, 19. Leg IV: tibia, 12; metatarsus, 6; tarsus, 12.

Claws:

Superior tarsal claws with 6 long teeth in one row.

Spinnerets:

4, visible dorsally. Posterior median spinnerets 0.5 long, 0.3 wide. Basal segment of posterior lateral spinnerets 1.0 long, apical segment 0.6 long.

Paratype female (KS9108) (Fig. 13)

Carapace length 10.0, width 9.3, height 4.0. Abdomen length 16.0, width 11.5. Dorsal abdominal spinule density, 38.

Colour in alcohol:

Carapace grey-brown, chelicerae darker and redder. Abdomen yellow-grey, with a darker dorsal pattern. Legs concolorous with carapace except that setiferous areas of leg segments are darker. Glabrous strips on femorae, patellae and tibiae. Sternum lighter.

Carapace:

Broadly ovate, narrowing posteriorly from about a third from front. Fine setae on lateral margins of carapace and in bands radiating from the fovea. Strong setae between and in front of anteriolateral eyes and in a band reaching two-thirds of way from eyes to fovea. Fovea procurved.

Chelicerae:

Length, 6.0; height, 3.9; width, 3.0. Horizontal. Dorsally glabrous except for a setiferous triangle pointing backward from the front. Rastellum of 19 teeth. Outer margin of cheliceral groove with 8 teeth plus nodules adjacent in the furrow. Inner margin of groove with 6 large teeth.

Labium:

Length 1.0, width 2.1. Semicircular anteriorly, indented anteriomedially. No cuspules. Separated from sternum by a furrow.

Maxillae:

Length 3.7, width 3.0. Flattened, with a basal projection toward midline of body. Cuspules present anteriobasally.

Sternum:

Length 7.8, width 5.5. Covered with setae and bristles. Anterior pair of sigillae halfway along sternum, separated from margin by their length. Posterior pair of sigillae just behind these, separated from margin by twice their length.

Legs:

Dense scopulae on ventral surfaces of tarsi of palps and legs I and II only. Tibial spines setiform.

	Palp	I	II	III	IV
Femur	5.2	6.9	6.0	5.2	7.0
Patella	5.3	4.3	4.2	3.8	4.9
Tibia	3.3	4.1	3.3	2.6	4.8
Metatarsus	—	2.5	2.4	3.0	5.2
Tarsus	4.1	2.3	2.2	2.6	3.1

Spines:

Palp: tibia, strong setae + 4a; tarsus, 3v. Leg I: tibia, 2v; metatarsus, 6v; tarsus, 9v. Leg II: tibia, 2v + strong ventral setae; metatarsus, 7v; tarsus, 8v. Leg III: metatarsus, 9v 22d; tarsus, 14v 8d. Leg IV: metatarsus, 10v; tarsus, 14v.

Trichobothria:

Palp: tibia, 5; tarsus, 9. Leg I: tibia, 15; metatarsus, 5; tarsus, 12. Leg II: tibia, 15; metatarsus, 7; tarsus, 19. Leg III: tibia, 15; metatarsus, 8; tarsus, 23. Leg IV: tibia, 14; metatarsus, 8; tarsus, 17.

Claws:

Superior tarsal claws with one small basal tooth.

Spinnerets:

4, not visible from above. Posterior median spinnerets 1.0 long, 0.9 wide. Basal segment of posterior lateral spinnerets 1.2 long, apical segment 0.8 long.

Types

Holotype male collected Hillston, N.S.W., 23.v.1980 by S. McCarthy. Australian Museum, Sydney (KS8324).

Paratype males: Warren, N.S.W., 29.v.1978 (KS1527); Girilambone, N.S.W. (KS1669); Hay, N.S.W., 11.v.1981, F. Cole (KS8325); Tamworth, N.S.W., 11.x.1982, C. Easton; Benalla, V., 20.v.1981 (in Museum of Victoria).

Paratype female: Hay, N.S.W., 19.iv.1982, D. Melia (KS9108).

DISCUSSION

Specimens assigned to '*Aganippe subtristis*' in both the Australian Museum, Sydney, and the South Australian Museum, Adelaide, were examined with a view to determining their relationship to the eastern species. None of these was *A. subtristis*, *sensu* Main 1957, apparently belonging to an as yet undescribed species (Main, pers. comm.) which, like *A. planites*, has an untwisted palpal style. On the other hand, specimens from the South Australian Museum clearly of *A. smeatoni* have been examined and the twisting of the palpal style, accurately represented by the diagram in Hogg (1902), is of a completely different nature from that observed in *A. berlandi*, *A. montanus* and *A. winsori*.

At this time behavioural data on members of the genus in this area do not exist in useful quantities (although it is hoped to rectify this situation in the future) so that these cannot be used to distinguish the species.

The eyes are moderately enlarged, so that the spiders possibly exhibit both twig-lining and non-twig-lining behaviour (Main, 1957: 467). Specimens displaying both twig-lining and non-twig-lining behaviour occur throughout the Lake Cargelligo — Mount Hope — Nyngan region (Gray, pers. comm.).

	Palp	I	II	III	IV
Femur	5.2	6.9	6.0	5.2	7.0
Patella	5.3	4.3	4.2	3.8	4.9
Tibia	3.3	4.1	3.3	2.6	4.8
Metatarsus	—	2.5	2.4	3.0	5.2
Tarsus	4.1	2.3	2.2	2.6	3.1

Spines:

Palp: tibia, strong setae + 4a; tarsus, 3v. Leg I: tibia, 2v; metatarsus, 6v; tarsus, 9v. Leg II: tibia, 2v + strong ventral setae; metatarsus, 7v; tarsus, 8v. Leg III: metatarsus, 9v 22d; tarsus, 14v 8d. Leg IV: metatarsus, 10v; tarsus, 14v.

Trichobothria:

Palp: tibia, 5; tarsus, 9. Leg I: tibia, 15; metatarsus, 5; tarsus, 12. Leg II: tibia, 15; metatarsus, 7; tarsus, 19. Leg III: tibia, 15; metatarsus, 8; tarsus, 23. Leg IV: tibia, 14; metatarsus, 8; tarsus, 17.

Claws:

Superior tarsal claws with one small basal tooth.

Spinnerets:

4, not visible from above. Posterior median spinnerets 1.0 long, 0.9 wide. Basal segment of posterior lateral spinnerets 1.2 long, apical segment 0.8 long.

Types

Holotype male collected Hillston, N.S.W., 23.v.1980 by S. McCarthy. Australian Museum, Sydney (KS8324).

Paratype males: Warren, N.S.W., 29.v.1978 (KS1527); Girilambone, N.S.W. (KS1669); Hay, N.S.W., 11.v.1981, F. Cole (KS8325); Tamworth, N.S.W., 11.x.1982, C. Easton; Benalla, V., 20.v.1981 (in Museum of Victoria).

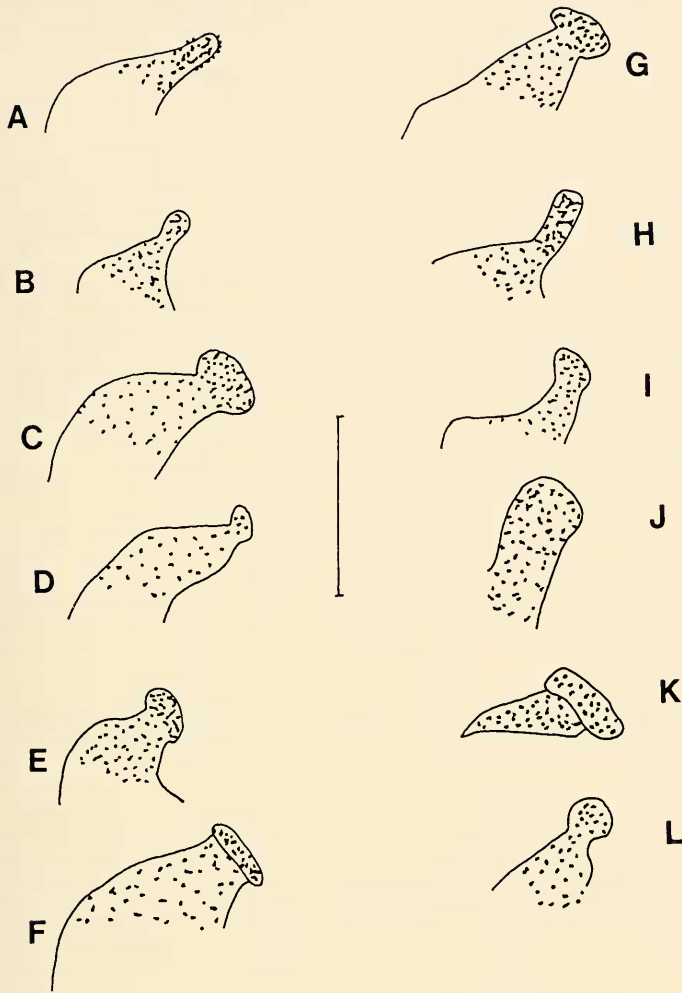
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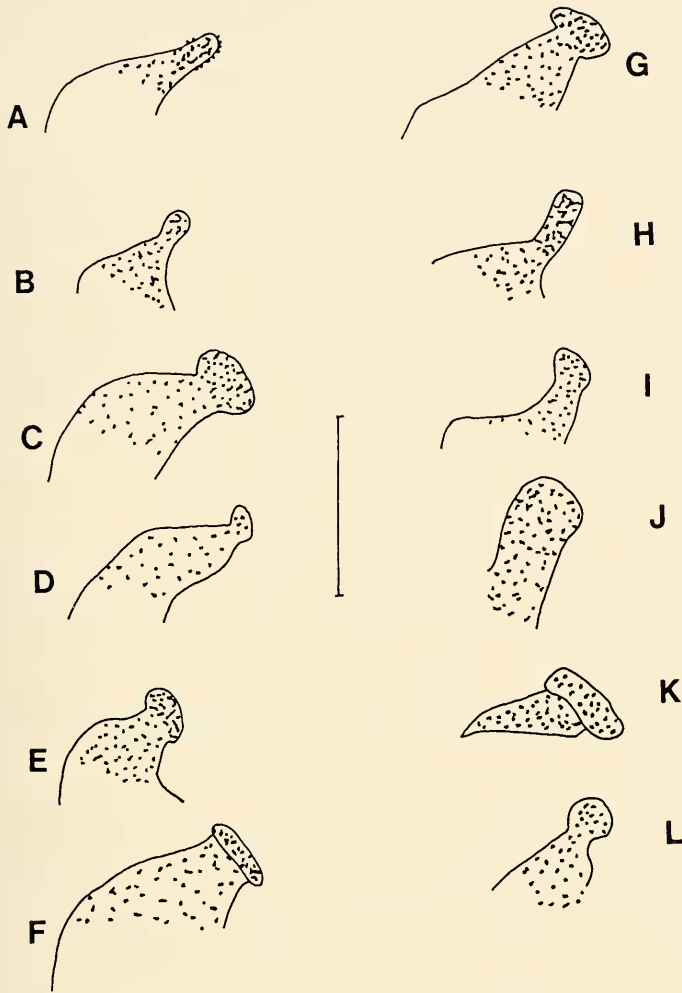
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Fig. 14. Variation in right spermathecae of eastern Australian *Aganippe* spp. Females figured are unidentified specimens collected from within the range of named males. Bar is 2mm. A-F: With inner margin of canal parallel with body axis. A-C: From areas associated with straight-stigma males. D-F: From areas associated with twisted-stigma males. G-L: With inner margin of canal pointing outward. G-K: From areas associated with twisted-stigma males. L: From area associated with straight-stigma males.

In conclusion attention is drawn to the geographic distribution of these species. *Aganippe planites* is found on the plains, and is characterized by an untwisted male palpal embolus. On the other hand, the other species considered are characterized by an embolus which is twisted in a common manner, even though there is variation in the tibial apophyses. Main (1981, pers. comm.) believes that *Aganippe* has radiated virtually *in situ*, i.e. through adaptive specialization of local populations. However, the situation in



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the eastern part of the continent nevertheless suggests that, following the retreat of the sea at the end of the Middle Tertiary, there was a movement eastwards by the genus in two distinct directions from the Flinders Ranges area if the postulate in Main (1957: 464) is held to be correct. One group moved onto the plains, and, because of the relatively uniform nature of the environment, remained as a single species, *A. planites*. However, a second group moved into the western end of the Great Dividing Range. From there, this group moved eastwards and northwards along the inland slopes of the Great Divide. The reproductive isolation favoured by the more dissected terrain resulted in more intensive speciation, producing at least three (and possibly more) species — *winsori*, *montanus* and *berlandi*. The last has so far been found on plains adjacent to mountains.

Spermathecae from a number of females were examined (Fig. 14) and a clear, although not totally consistent, trend emerged. Females from areas associated with straight-stigma males tended to have the inner margin of the spermathecal canal lying parallel with the long axis of the body, before bending sharply outwards. In contrast, females from areas associated with twisted-stigma males tended to have the inner margins pointing outward from their origins. Unfortunately the high degree of variability means that this is not a totally reliable criterion for species-separation.

ACKNOWLEDGEMENTS

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